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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,083	04/19/2001	Woo Sik Yoo	M-11439 US	9578

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EXAMINER

FOX, CHARLES A

ART UNIT	PAPER NUMBER
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3652

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/838,083	Applicant(s) YOO, WOO SIK	
	Examiner Charles A. Fox	Art Unit 3652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20040211.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-9 and 11-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-9 and 11-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 May 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Drawings

New corrected drawings are required in this application for the reasons set forth in the attached Draftspersons Drawing Review. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 11-13, 18 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Caveney et al. In regards to claim 11 Caveney et al. US 5,765,983 discloses a system for transporting semiconductor wafers comprising:

- a process system including a process chamber (26) and a transport module (22);
- a wafer transport device (24) disposed in said transport module (22);
- a container (42) configured to hold a plurality of wafers;
- said container being and remaining a separate component from said processing system;

wherein said wafer transport device is designed to extend into said container and remove a wafer for delivery to a process chamber;

wherein said transport device (24) is exposed to the ambient environment outside of said processing system while extending into said container.

In regards to claim 12 Caveney et al. also disclose that said wafer transport device comprises a robot with an extensible arm and an end effector.

In regards to claim 13 Caveney et al. further disclose that the wafer transport device is fixed within the transport chamber.

In regards to claim 18 Caveney et al. also discloses a gate valve assembly between the transport module and the process chamber.

In regards to claim 19 Caveney et al. disclose that the wafer container is a cassette.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caveney et al. in view of Gordon et al. In regards to claims 1 and 14 Caveney et al. teach a method of transporting semiconductor wafers comprising the steps of:

providing a processing system including a transport module and a process chamber;

extending a transport robot into a cassette while said cassette remains a distinct and uncoupled component from said system;

exposing the wafer transport robot to the ambient environment during extension into said cassette;

removing at least one wafer from said cassette;

placing said removed wafer into a process chamber via an extendable arm on said robot.

Caveney et al. do not teach the cassette as being a FOUP device. Gordon et al. US 6,013,920 teaches a method of handling wafers from a FOUP. It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the methods taught by Caveney et al. by providing the cassette as a FOUP as taught by Gordon et al. in order to allow the device to operate using cassettes that maintain the wafers in a clean state as they are moved about the manufacturing area.

In regards to claim 2 Caveney et al. also teach that said wafer transport device comprises a robot with an extensible arm and an end effector.

In regards to claim 3 Caveney et al. further teach that the wafer transport device is fixed within the transport chamber.

In regards to claim 9 Caveney et al. also teaches opening a gate valve assembly between the transport module and the cassette to allow said transport device to extend into said cassette.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caveney et al. in view of Gordon et al. as applied to claim 1 above, and further in view

of Beaulieu et al. (US 5,882,413). Caveney et al. in view of Gordon et al. teach the limitation of claim 1 as above they do not teach using a storage location or the type of processing chamber used or the use of a cooling chamber. Beaulieu et al. (US 5,882,413) disclose a method for transporting semiconductor wafers comprising:

- providing a processing system (10) including a transport module (12) and a process chamber (14);

- extending a semiconductor transport device (22) from said transport module (12) into adjacently positioned container, said container being a separate component from said processing system;

- removing at least one wafer (s) from said container using said wafer transporting device;

- wherein the transport device (22) comprises a robot including an extendible arm and an end effector (29);

- and the transport device (22) is in a fixed position;

- placing the wafers (s) in a storage position (34);

- wherein the process chamber is a chemical vapor deposition chamber;

- transporting the wafers (s) between a cooling chamber (36) and a process chamber (14).

- providing a processing system (10) including a transport module (12) and a process chamber (14);

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extending a semiconductor transport device (22) from said transport module (12) into adjacently positioned container, said container being a separate component from said processing system;

removing at least one wafer (s) from said container using said wafer transporting device;

wherein the transport device (22) comprises a robot including an extendible arm and an end effector (29);

and the transport device (22) is in a fixed position;

placing the wafers (s) in a storage position (34);

wherein the process chamber is a chemical vapor deposition chamber;

transporting the wafers (s) between a cooling chamber (36) and a process chamber (14).

It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the methods taught by Caveney et al. in view of Gordon et al. by moving the wafers into chambers and modules of various sorts are taught by Beaulieu et al. and are well known in the art.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Caveney et al. in view of Gordon et al. as applied to claim 1 above, and further in view of Moore et al. Caveney et al. in view of Gordon et al. teach the limitations of claim 1 as above, they do not teach the processing system as comprising a single rapid thermal processing chamber. Moore et al. (US 6,151,447) teach an apparatus with a rapid thermal processing chamber. It would have been obvious to one of ordinary skill in the

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art, at the time of invention that a rapid thermal chamber as taught by Moore et al. could have been used as the process chamber taught by Caveney et al. in view of Gordon et al. as modular chambers are well known in the art, and said chambers are designed to perform many processing steps including rapid thermal processing.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caveney et al. as applied to claim 11 above, and further in view of Beaulieu et al. Caveney et al. teach the limitations of claim 11 as above they do not teach the system having a storage location or the type of processing chamber used or a cooling chamber. Beaulieu et al. disclose an apparatus for transporting semiconductor wafers comprising:

- a processing system (10) including a transport module (12) and a process chamber (14);

- an extending semiconductor transport device (22) ;

- wherein the transport device (22) comprises a robot including an extendible arm and an end effector (29);

- and the transport device (22) is in a fixed position;

- a storage position (34);

- wherein the process chamber is a chemical vapor deposition chamber;

- a cooling chamber (36) and a process chamber (14);

It would have been obvious to one of ordinary skill in the art, at the time of invention to modify the device taught by Caveney et al. in view of Gordon et al. by providing the chambers and modules of various sorts are taught by Beaulieu et al. as they are well known in the art.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Caveney et al. as applied to claim 11 above, and further in view of Moore et al. Caveney et al. teach the limitations of claim 11 as above, they do not teach the processing system as comprising a single rapid thermal processing chamber. Moore et al. teach an apparatus with a rapid thermal processing chamber. It would have been obvious to one of ordinary skill in the art, at the time of invention that a rapid thermal chamber as taught by Moore et al. could have been used as the process chamber taught by Caveney et al. as modular chambers are well known in the art, and said chambers are designed to perform many processing steps including rapid thermal processing.

Response to Amendment

The amendments to the claims filed on November 10, 2003 have been entered into the record.

Response to Arguments

Applicant's arguments filed November 10, 2003 have been fully considered but they are not persuasive. In regards to the rejection of claim 11, Figure 1 of the Caveney does show the elevator mounted onto the process chamber as stated by applicant. Figure 1 also shows a space between the load lock chamber (22) and the front face of the wafer carrier. The elevator of Caveney is designed to move side to side and vertically to place a wafer in position for the transfer arm to access it. Caveney does not provide for moving the carriers towards and away from the process device. As such the front of the carriers are open to the ambient environment and the transfer arm must traverse that environment to access the carrier.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The Gordon reference is used to meet the limitation of using a FOUP, as opposed to a generic wafer carrier. No other structure from Gordon is relied on in making the rejections. Therefore the rejections are deemed to be proper.

It is further noted that while the applicant has shown an embodiment of the instant invention using FOUP carriers they are said to be non-limiting in terms of the invention. This is taken by the examiner to mean that any wafer carrier or container is equivalent to a FOUP in regards to the instant invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles A. Fox whose telephone number is 703-605-4294. The examiner can normally be reached between 7:00-5:00 Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eileen D. Lillis can be reached at 703-308-3248. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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5/3/04



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